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Tertiary Cardiac Care Services in Rhode Island

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The Hanaway Act of 1996 (Rhode Island General Laws 23-17-45) authorized the Director of Health "to establish through regulation quality and volume related standards to be achieved and maintained for specific tertiary health care services … where peer reviewed medical and health literature establishes significant relationships between desired quality related outcomes and the volume of services provided." Under this authority, the Director has promulgated regulations covering hospitals' provisions of the following services:

- Neonatal intensive care units
- Coronary angioplasty programs
- Coronary artery bypass graft (CABG) surgical programs
- Heart and/or liver transplant programs

For each of these services, the peer-reviewed medical literature supports a minimum utilization volume for facilities above which patient outcomes are significantly better in general than in facilities where service volumes are below the minimum.[1]

The regulations cover the services, equipment, and staffing requirements for each tertiary service and set minimum standards for annual utilization and outcomes in order to receive and maintain designation under the regulations. This report presents information on procedure volumes for the tertiary cardiac care services other than heart transplants, which are not performed in any hospital in Rhode Island.

Methods. Any hospital providing one or more of the tertiary care services covered by regulation is required to maintain certain operational statistics and report them to the Department of Health's Office of Facilities Regulation annually. For coronary angioplasty and CABG, the statistics are those listed in Table 1. The annual period covered is the hospital fiscal year (October 1 – September 30), and hospitals submit their reports to the Office approximately 6 months after the end of that period. The procedure volume data for this report were taken from copies of the hospitals' reports for fiscal years 2001-2004 received by the Department's Center for Health Data and Analysis.

Results. As of October 2004, two hospitals met the regulatory requirements for coronary angioplasty and CABG programs.[2,3] (Landmark Medical Center was approved for both services as of March 2005.) The two hospitals with cardiac programs were Rhode Island Hospital and Miriam Hospital, which provided these services prior to the passage of the Hanaway Act and were designated when the regulations for these procedures first went into effect.

Table 1.
Reporting Requirements for Coronary Angioplasty and Coronary Artery Bypass Graft Programs

- Number of coronary angiographies
- Number of coronary angioplasties, by primary operator
- Number of coronary artery bypass graft (CABG) surgeries, by principal surgeon
- Number of emergency CABG surgeries in the same hospital stay following coronary angioplasty
- In-hospital mortality rate for coronary angioplasty patients
- In-hospital mortality rate for CABG surgical patients
- Number of coronary angioplasties by indication for performing the procedure
- Number of CABG operations by indication for performing the surgery
- Other data as specified by the Director of Health

For coronary angioplasty, existing programs are required to maintain a minimum annual utilization rate of 400 procedures per year. New programs are required to demonstrate the

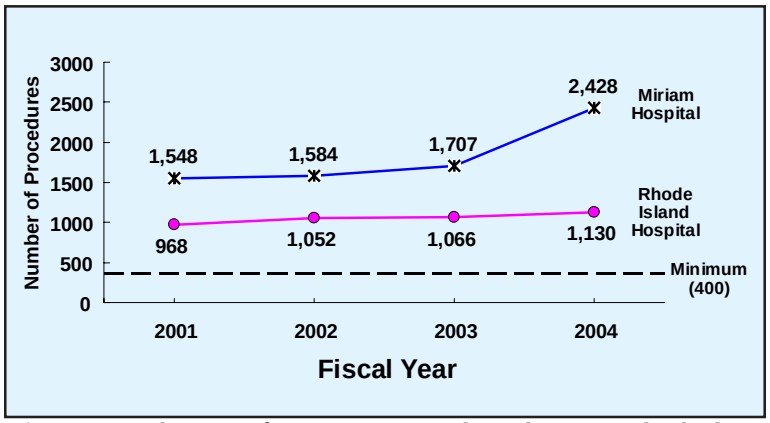

Figure 1. *Utilization of Coronary Angioplasty, by Hospital, Rhode Island, Fiscal Years 2001-2004.*

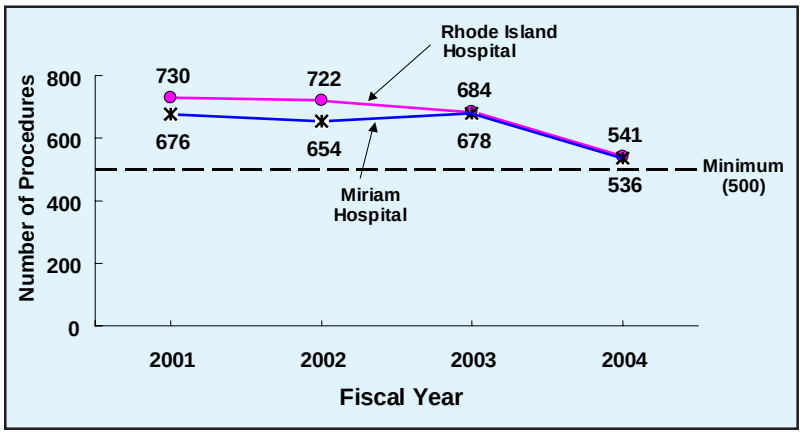

Figure 2. *Utilization of Surgical Procedures Requiring Cardiopulmonary Bypass, by Hospital, Rhode Island, Fiscal Years 2001-2004.*

expectation of achieving and maintaining this level of utilization within two years of opening a coronary angioplasty program. The annual volumes reported by the two hospitals during the period 2001-2004 appear in Figure 1.

Hospitals in Rhode Island that have existing CABG surgical programs are required to maintain a minimum annual rate of 500 surgical patients per year who require cardiopulmonary bypass (CPB) capability, the majority of whom have coronary artery bypass grafts. New programs are required to demonstrate the expectation of achieving and maintaining this level of utilization within three years of opening a coronary artery bypass graft surgical program. The annual volumes reported by the two hospitals during the period 2001-2004 appear in Figure 2.

Discussion. The Hanaway Act supports the limitation of certain tertiary care services to facilities that can meet quality-driven minimum volume requirements. It provides for an orderly expansion of these services to additional facilities as demand increases and specifies a hospital's response when its volume decreases below the minimum.

During the period 2001-2004, both Rhode Island Hospital and the Miriam Hospital maintained annual procedure volumes for both coronary angioplasty and CABG that exceeded the minimum volume requirements for these procedures. For coronary angioplasty, the reported volumes were substantially above the minimum level of 400, ranging between 968 and 2,428. In addition, between 2001 and 2004, procedure volumes increased in both hospitals, by 17% at Rhode Island Hospital and by 57% at Miriam Hospital.

However, volumes for procedures requiring CPB capability, including CABG, fell in both facilities between 2001 and 2004, by 26% at Rhode Island and by 21% at Miriam. In 2004, volumes at both hospitals were approaching the minimum of 500 procedures, below which a hospital must submit to the Department a plan to achieve optimal volume standards or refer patients to other appropriate facilities. In the history of the Act, this provision has not been activated for any of the regulated services; however, if the trends in volume for procedures requiring CPB continue, the provision may be triggered within the next few years for one or both of the facilities currently performing these procedures.

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